

Pedestrian & Bicycle Guide



:: A resource for creating safer multi-use roadways



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BICYCLE PLAN
TECHNICAL DESIGN
BETTER WALKING AND CYCLING CONDITIONS
INCREASE SAFETY
PUBLIC INVOLVEMENT
PEDESTRIAN EDUCATION
INSTALLATION OF
PUBLIC INVOLVEMENT

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Glossary of Terms

ACRONYM	NAME
AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
CatEx	Categorical Exclusion
CD	Concept Development
CMAQ	Congestion Mitigation/Air Quality
CMPO	Cache Metropolitan Planning Organization
DMPO	Dixie Metropolitan Planning Organization
DOT	Department of Transportation
EA	Environmental Assessment
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
MAG	Mountainland Association of Governments
MPO	Metropolitan Planning Organization
MUTCD	Manual on Uniform Traffic Control Devices
PIM	Public Involvement Manager
PM	Project Manager
PTA	Parent Teacher Association
ROD	Record of Decision
RTP	Recreational Trails Program or Regional Transportation Plan
SES	State Environmental Study
SNAP	Student Neighborhood Access Plan
SPUI	Single Point Urban Interchange
SR2S	Safe Routes to School
STIP	Statewide Transportation Improvement Program
TE	Transportation Enhancement
TIP	Transportation Improvement Program
UDOT	Utah Department of Transportation
USDOT	United States Department of Transportation
WFRC	Wasatch Front Regional Council

Directory of Web Links

Topic	Location	Link
Guidelines for Pedestrian and Bicycle Accommodations	Page 2	http://www.udot.utah.gov/main/f?p=100:pg:9656167870379360000:::1,T,V:11 ,
Roadway Design Manual of Instruction	Page 6	http://www.udot.utah.gov/main/f?p=100:pg:2854060663542616008:::1,T,V:1498
Utah Traffic Controls for School Zones	Page 6	http://www.udot.utah.gov/main/f?p=100:pg:4864475144495475696:::1,T,V:578
Guide for the Planning, Design, and Operation of Pedestrian Facilities	Page 7	https://bookstore.transportation.org/item_details.aspx?id=119
PEDSAFE -- Pedestrian Safety Guide and Countermeasure Selection System	Page 7	http://www.walkinginfo.org/pedsafe/
ADA Standards for Accessible Design	Page 7	http://www.ada.gov/stdspdf.htm
Guide for the Development of Bicycle Facilities	Page 7	https://bookstore.transportation.org/item_details.aspx?id=104
Selecting Roadway Design Treatments to Accommodate Bicycles	Page 7	http://www.udot.utah.gov/main/f?p=100:pg:182021976319645300:::1,T,V:2059
Bicycle Element of the Scottsdale Transportation Master Plan	Page 7	http://www.scottsdaleaz.gov/Assets/documents/traffic/Adopted+Transportation+Master+Plan/Bicycle+Element.pdf
Manual on Uniform Traffic Control Devices for Streets and Highways	Page 7	http://mutcd.fhwa.dot.gov/
Traffic Calming: State of the Practice	Page 7	http://www.ite.org/emodules/scriptcontent/Orders/ProductDetail.cfm?pc=IR-098
Oregon Bicycle and Pedestrian Plan	Page 7	http://www.oregon.gov/ODOT/HWY/BIKEPED/planproc.shtml
UDOT Transportation Enhancements Program	Page 24	http://www.udot.utah.gov/main/f?p=100:pg:9876272023477274000:::1,T,V:192 ,
UDOT Safe Routes to School Program	Page 25	http://www.udot.utah.gov/main/f?p=100:pg:9876272023477274000:::1,T,V:1388 ,
Scenic Byways	Page 25	http://www.bywayonline.org/grants/
UDOT Safe Sidewalk Program	Page 26	http://www.udot.utah.gov/main/f?p=100:pg:9876272023477274000:::1,T,V:583 ,
Bikes Belong Coalition	Page 27	http://www.bikesbelong.org/
Safe Routes to School Guide	Page 28, 30	http://www.saferoutesinfo.org/guide/
Pedestrian Education Web Page	Page 28	http://www.walkinginfo.org/education/
Bicyclist Education Web Page	Page 30, 31	http://www.bicyclinginfo.org/education/
Bicycle and Pedestrian Safety Resource Guide	Page 28	http://www.nhtsa.dot.gov/people/injury/pedbimot/bike/resourceguide/dl/directions.html
League of American Bicyclists Bike Ed courses	Page 30	http://www.bikeleague.org/programs/education/
Utah Bicycle Commuter Guide	Page 30	http://www.udot.utah.gov/main/f?p=100:pg:7585561789200331000:::1,T,V:1020
Bicycling Street Smarts	Page 30	http://www.bikexpert.com/streetsmarts/index.htm
Sharing the Road with Bicycles DVD	Page 30, 31	http://health.utah.gov/vipp/bicycleSafety/roadrules.html
Motorist & Bicyclist Guide for Sharing the Road	Page 30	http://health.utah.gov/vipp/pdf/share_the_road_1.pdf
Bike Suitability and Restrictions Maps	Page 30	http://www.udot.utah.gov/main/f?p=100:pg:6141562579308148000:::1,T,V:275
Drive Right Textbook	Page 31	http://phcatalog.pearson.com/program_single.cfm?site_id=6&discipline_id=812&subarea_id=1285&program_id=30201
Utah Vehicle Codes	Page 32	http://le.utah.gov/~code/TITLE41/41_06a.htm
UDOT Long Range Transportation Plans	Page 33	http://www.udot.utah.gov/main/f?p=100:pg:9876272023477274000:::1,T,V:207 ,
Wasatch Front Regional Council	Page 34	http://www.wfrc.org
Mountainland Association of Governments	Page 34	http://www.mountainland.org/
Cache Metropolitan Planning Organization	Page 34	http://www.cachempo.org/
Dixie Metropolitan Planning Organization	Page 34	http://www.dixiempo.org/
UDOT Statewide Transportation Improvement Program	Page 35	http://www.udot.utah.gov/main/f?p=100:pg:9876272023477274000:::1,T,V:40 ,
Current Studies	Page 36	http://www.udot.utah.gov/main/f?p=100:pg:5888870187409275000:::1,T,V:70 ,
Projects in Design	Page 37	http://www.udot.utah.gov/main/f?p=100:pg:5888870187409275000:::1,T,V:631 ,
Projects Under Construction	Page 37	http://www.udot.utah.gov/main/f?p=100:pg:5888870187409275000:::1,T,V:69 ,
UDOT Walking and Biking website	Page 39	http://www.udot.utah.gov/walkingandbiking



INTRODUCTION

1.0 :: PURPOSE OF THE GUIDE

The Pedestrian and Bicycle Guide provides useful, user-friendly information to internal Utah Department of Transportation (UDOT) personnel as well as citizens interested in improving walking and cycling conditions. Chapters 2 and 3 of this guide focus on design and maintenance topics, respectively, that are relevant to pedestrians and cyclists. Chapter 4 presents information about the funding of pedestrian and bicycle facilities, while Chapter 5 discusses the importance of motorist, cyclist, and pedestrian education. Finally, Chapter 6 discusses UDOT project development processes for the purpose of helping pedestrian and bicycle interest groups better participate in UDOT projects.

1.1 :: UDOT'S WALKING AND CYCLING ROLE

UDOT policies have both direct and indirect impacts on conditions experienced by pedestrians and bicyclists. Direct impacts result from the way that state-owned roadways are designed and constructed. Roads designed to balance the needs of pedestrians and cyclists with motorists' needs are more likely to encourage people to walk or bike to their destinations.

Indirect impacts result from the “trickle down” effect that UDOT policies can have on decisions made by local governments. UDOT's efforts to better accommodate pedestrians and cyclists will help to set a good example for municipalities to follow.

1.2 :: URBAN AND RURAL CONSIDERATIONS

State routes play critical roles in both urban and rural communities because they often are the most direct routes for commuting, shopping, and access to recreational areas. In rural areas, “Main Street” is usually a state route and serves as one of the only routes to get from one end of town to the other or from one town to the next. Civic, educational, and retail land uses are often concentrated along these routes. Although traffic volumes along rural highways are usually much lower than their urban counterparts, truck traffic percentages and vehicle speeds may be higher, thereby posing risks to pedestrians and cyclists. It is important to rural communities that state routes do not become barriers for pedestrians and bicyclists wanting to either cross “Main Street” or travel along its length.



Exhibit 1-1 Utah “Main Street” - type roadway

1.3 :: UDOT POLICIES AND GUIDANCE

The United States Department of Transportation (USDOT) supports pedestrian and bicycle accommodations. In conformance with USDOT guidance, UDOT has adopted *Policy 07-117: Routine Accommodations for Bicyclists and Pedestrians*. An important component of this policy is the *Guidelines for Bicycle and Pedestrian Accommodations* document. This document serves as the mechanism by which UDOT reviews planned projects for pedestrian and bicycle needs. The document contains a series of questions that must be answered during the concept stage of each new construction or reconstruction project. Questions include items such as:

- Are sidewalks needed in the area?
- Is there a high amount of crossing activity at intersections or mid-blocks?
- Is the transportation facility included in or related to pedestrian and bicycle facilities identified in a master plan?
- Does the existing transportation facility provide the only convenient transportation connection/linkage between land uses in the local area or region?

[Click here](#) to view the full Guidelines document.



1.4 :: THE STATE OF THE STATE

According to 2000 U.S. Census statistical data, Wayne County has the highest percentage of “walk to work” trips at 9.5%, followed by Daggett and San Juan Counties at 8.8% and 8.7%, respectively. Grand County led the state in “bike to work” trips at 3.0%, followed by Cache and Juab Counties at 1.1% and 1.0%, respectively. Although smaller percentage-wise, the urban counties along the Wasatch Front still far outnumber the rural counties in terms of actual numbers of people walking and biking to work. Salt Lake County had the highest percentage of public transportation trips at 3.5%, followed by Tooele County at 2.3% and Davis County at 2.2%.

According to the *2001 National Household Transportation Survey*, 28% of trips in metro areas are one mile or less, and 67% of those trips are made by car. So, 19% of metro area trips are car trips of one mile or less! An additional 12% of metro trips are less than two miles. These numbers represent a large number of trips that could potentially be converted from car trips to pedestrian and bicycle trips.

1.5 :: QUALITY OF LIFE CONSIDERATIONS

Though difficult to quantify in monetary terms, the quality of life benefits of pedestrian and bicycle facilities are nonetheless important.

1.5.1 :: AIR QUALITY

For each person that chooses to replace a car trip with a bicycle or walking trip, there is a small air quality benefit due to reduced vehicle exhaust. As UDOT strives to make it safer for pedestrians and bicyclists to travel on Utah’s roadways, they will also be helping all Utahns breathe a little bit easier.

1.5.2 :: HEALTHY LIFESTYLES

Health problems like obesity, heart disease, and diabetes are increasingly afflicting Americans. These diseases are all related to exercise habits – or lack of them. Research indicates that the design of communities has an effect on the amount of physical activity that people get. Transportation networks help to form the backbones of communities, and as such they influence residents’ activity levels. Adopting policies and procedures to increase safety and comfort levels for pedestrians and cyclists will encourage Utahns to walk or bike to more destinations, thereby enabling them to live healthier, more active lives.

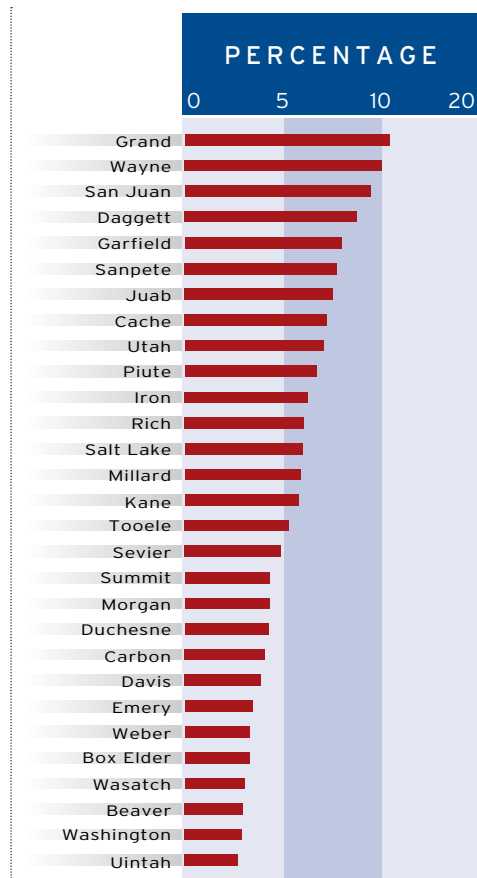


Exhibit 1-2 Percentage of Utahns who rode public transportation, bicycled or walked to work by county

A study was conducted in 2005 at five elementary schools in western Salt Lake County by the Utah State Violence and Injury Prevention Program to determine the travel characteristics of students. This study found that of children living less than one mile from school, 52% were driven to school and 32% were driven home. While this study is not necessarily representative of the entire state, it does indicate that there are many children that currently are driven to school that could instead walk or ride a bike if the barriers to doing so are reduced.

1.5.3 :: SAFETY

Perceived danger is a common factor for why people choose not to commute by bicycle or on foot. Traffic safety concerns are also commonly cited as reasons why people do not allow their children to walk or bike to school. There will always be some risk involved with walking or riding a bike (as there will be with driving a car). However, this risk can be minimized by ensuring that roads accommodate pedestrians and bicyclists appropriately.

1.6 :: ECONOMIC CONSIDERATIONS

Some people are pedestrians and cyclists by choice. They may enjoy the exercise or want to do something good for the environment. Many others, however, walk or bike because they cannot afford to drive and do not have any other choice. As gas prices continue to rise, more people are looking for ways to walk or bike to more of their destinations. Pedestrians and cyclists – whether they fall into those categories by choice or by necessity – will benefit financially as it becomes safer and easier for them to travel on foot or by bike.

The sustaining economic base in rural Utah has traditionally been resource extraction and farming. As some of the jobs associated with these industries diminish, tourism and recreation are becoming more important.



www.pedbikeimages.org - Dan Burden

Exhibit 1-3 Walking or biking to school is a good way to get daily exercise



Bartlett Wash, Moab, Utah. Photo by: Mathew Barlow

Exhibit 1-4 Trails can bolster rural economies

Several bicycle touring companies already operate tours in Utah on a regular basis, chiefly in Southern Utah. The city of Moab has transitioned from an economy based on mining to one based on recreation. Bicycle touring groups generally ride on state routes in rural areas, and the safety of roads is a large consideration for group organizers when choosing routes. As UDOT works to better accommodate cyclists on Utah's highways, it is likely that touring companies will feel comfortable expanding their tour options to include more routes in Utah, thus strengthening the rural economic base.

An additional economic consideration is that communities that accommodate pedestrians and bicyclists may have an edge when it comes to protecting home values. A 2002 survey of 2,000 recent homebuyers sponsored by the National Association of Homebuilders showed that "walking/jogging/bike trails" ranked second only to "highway access" on a list of important community amenities.

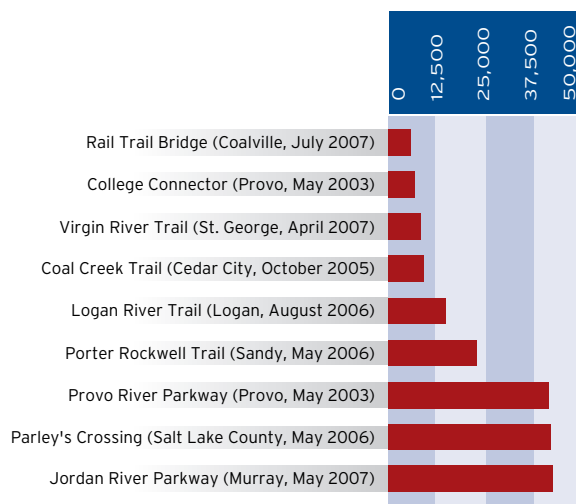


Exhibit 1-5 Statewide Trail Counts (Monthly)



DESIGNER RESOURCES

2.0 :: INTRODUCTION

The purpose of this chapter is to provide roadway designers with tools to accommodate pedestrians and bicyclists. Numerous pedestrian and bicycle design documents are described and readers are referred to those sources for detailed guidance regarding specific design questions. Although not all design scenarios can be addressed in this chapter, guidelines are provided for some situations that UDOT designers are likely to encounter frequently. Potential solutions to common design challenges are described. The last part of this chapter includes a list of bicycle and pedestrian interest groups located throughout the state that can be resources to designers in understanding local-area needs.

2.1 :: UDOT POLICIES AND DESIGN MANUALS

The *Guidelines for Bicycle and Pedestrian Accommodations* document mentioned in Chapter 1 is an important document for designers. This document is filled out for each project at the concept stage. It should give guidance to designers about elements that need to be designed into the project to accommodate bicyclists and pedestrians.

The UDOT [*Roadway Design Manual of Instruction*](#) is also a very important document for designers. Chapter 9 of this manual specifically discusses planning and design of pedestrian and bicycle facilities. Another UDOT document that addresses pedestrian and bicycle topics is [*Utah Traffic Controls for School Zones*](#). It contains guidelines specifically for roadway design in school zones.

2.2 :: OTHER DESIGN RESOURCES

Many resources provide detailed guidance to roadway designers looking for information on a variety of different topics related to pedestrians and bicyclists. A sampling of these resources is provided in the tables below. Tables 1 and 2 summarize pedestrian and bicycle design resources, respectively. Table 3 lists design resources that cover both pedestrians and bicycles. Click on the title of each document in order to view it.

Table 2-1 Pedestrian Design Resources

Design Resource	Topics/Purpose
Guide for the Planning, Design, and Operation of Pedestrian Facilities (published by AASHTO)	Discusses pedestrian design topics, including: medians, curb radii, lighting, surface treatments, walking speeds, intersections, and traffic calming.
PEDSAFE -- Pedestrian Safety Guide and Countermeasure Selection System (published by FHWA)	An online system designed to assist practitioners with the selection of countermeasures to address pedestrian safety and mobility problems.
ADA Standards for Accessible Design (published by the U.S. Department of Justice)	Provides detailed guidance about standards that need to be met in order to design facilities for disabled users.



Table 2-2 Bicycle Design Resources

Design Resource	Topics/Purpose
Guide for the Development of Bicycle Facilities (published by AASHTO)	UDOT has adopted this manual as the standard for bicycle facility design in Utah. On-street facility section covers: facility width requirements, bike lane striping, and railroad crossings. Shared-use path section covers: where shared-use paths are appropriate, curve radii, sight distance, and intersection treatments.
Selecting Roadway Design Treatments to Accommodate Bicycles (published by FHWA)	Contains tables that identify appropriate bicycle design treatments based on variables such as: user type, traffic volume, parking, vehicle mix, and vehicle speeds.
Bicycle Element of the Scottsdale Transportation Master Plan (published by City of Scottsdale, AZ)	Pages 28-31 and Appendix I provide detailed guidance regarding bicycle detection at traffic signals.



Table 2-3 Resources for Both Pedestrian and Bicycle Design

Design Resource	Topics/Purpose
Manual on Uniform Traffic Control Devices (MUTCD) for Streets and Highways (published by FHWA)	Contains traffic signing and striping guidelines for on-street and off-street bicycle facilities.
Traffic Calming: State of the Practice (published by Institute of Transportation Engineers)	Describes methods that are currently used to calm traffic in different roadway environments.
Oregon Bicycle and Pedestrian Plan (published by the Oregon Department of Transportation)	Created specifically for a state transportation department. Treats a wide variety of pedestrian and bicycle design elements, both in urban and rural settings.



Design manuals must be used with engineering judgment. Some design applications described in them may work well in one set of circumstances but not in another.



Exhibit 2-1 Shared-use path



Exhibit 2-2 Uncontrolled crosswalk



Exhibit 2-3 Signalized crosswalk



Exhibit 2-4 Walking adjacent to traffic

2.3 :: UDOT-SPECIFIC DESIGN GUIDANCE

State roadways primarily fall into three categories:

- high speed, low volume rural highways
- high speed, high volume freeways
- moderate speed, high volume urban arterials

There is negligible pedestrian demand for rural highways outside the limits of communities, and cyclists can be accommodated on these roads by ensuring that there is enough pavement width for them to be passed safely by motorists. The limited-access nature of freeways makes them good candidates for parallel **shared-use paths** that provide mobility and separation from freeway traffic.

The bulk of pedestrian and cyclist demand on state roadways occurs on moderate speed, high volume urban arterials. Even in heavily urbanized areas, many of the most continuous and direct travel routes are state-owned roadways. Most of these roads have moderate (35 mph) to high (55 mph) speed limits and carry high traffic volumes, both of which can deter pedestrians and cyclists. Certain design elements can mitigate safety concerns and make conditions more favorable for pedestrians and cyclists without severely affecting traffic flow. Sections 2.3.1 and 2.3.2 describe specific challenges faced by pedestrians and cyclists, respectively, on urban arterials, along with design elements that can be used to help solve these challenges.

2.3.1 :: PEDESTRIANS ON URBAN ARTERIALS

Potentially dangerous locations faced by pedestrians on urban arterials include:

- **uncontrolled crosswalks**
- **signalized crosswalks**
- **walking adjacent to traffic**

These types of locations, along with design treatments that can help to mitigate dangers, are described in the following sub-sections.

2.3.1.1 :: Uncontrolled Crosswalks

Signal spacing of 1/2-mile or more is common along urban arterials. This means that a person may have to walk 1/4-mile to cross at a traffic signal and then walk back 1/4-mile in order to cross the street safely. This may discourage people from walking or lead to an unsafe jaywalk crossing. UDOT policy states that marked crosswalks should not be placed at uncontrolled crossings where speed limits are 45 mph or higher because doing so may increase the safety risk.

Exhibit 2-5 shows a representative state-owned urban arterial roadway. It is six lanes wide with approximately 10 foot shoulders, and a 40 mph speed limit. There are three through lanes in each direction. On-street parking is permitted in the shoulder area, but usage is fairly sparse. The road is completely straight and **building setbacks** are generally large. Traffic signals are spaced every 1/2-mile. A **raised median** is present and crosswalks are placed occasionally at mid-block locations.

Raised medians help pedestrians using uncontrolled crosswalks in several ways. First, they can calm traffic speeds (especially if there are trees in the median), thereby making it seem less natural to drive fast. The second way that raised medians help pedestrians is by separating the crossing maneuver into two distinct parts. This allows pedestrians to focus on crossing one direction of traffic at a time rather than both directions at once. If the elimination of two-way left turn access is undesirable over long stretches, isolated **median “islands”** can be constructed at select locations where crossings are desired, as shown in Exhibit 2-8.

Another design element that can help improve uncontrolled crosswalks is a **curb bulb-out**. An existing example of this application is shown in Exhibit 2-9. Like medians, curb bulb-outs reduce the total amount of roadway space that pedestrians have to cross and can help to reduce vehicular speeds by constricting the roadway. They also provide better visibility to motorists by placing pedestrians in drivers’ line of sight. Bulb-outs are particularly valuable in areas where on-street parking is allowed and usage is frequent because they bring pedestrians out from behind parked cars where they are not as easily seen by drivers. Care should be taken to evaluate the impact of bulb-outs on cyclists because they can cause pinch points where cyclists who have previously been riding to the right of traffic must re-enter the main traffic flow. Bulb-outs can also affect other roadway elements such as drainage and snow removal. Designers must take those elements into consideration as well.



Exhibit 2-5 Typical state-owned urban arterial



Exhibit 2-6 Small building setbacks can decrease speed



Exhibit 2-7 Landscaped median



Exhibit 2-8 Median “island”



Exhibit 2-9 Curb bulb-out



Exhibit 2-10 Ped-actuated flashing crosswalk light



Exhibit 2-11 Existing urban arterial



Exhibit 2-12 Urban arterial modified to show median and bulb out



Exhibit 2-13 Large radius corner

A third option for increasing pedestrian safety at uncontrolled crosswalks is the installation of **pedestrian-actuated flashing lights**. These lights only activate when a pedestrian pushes the button. This treatment operates similar to flashing yellow lights in a school zone, and helps notify motorists that a pedestrian is crossing the roadway.

Exhibit 2-11 shows the location of an existing urban arterial and Exhibit 2-12 shows what this location could look like if a median and bulb-out is installed at the location. Notice the improved visibility of pedestrians to motorists, the reduced crossing distance that both elements provide, and also that the median allows the pedestrian to focus on crossing one direction of traffic at a time.

2.3.1.2 :: Signalized Crosswalks

Signalized crosswalks are another potential danger spot for pedestrians. A few basic guidelines are described below to help designers appropriately accommodate pedestrians.

Traffic signal pedestrian phase length

The current version of the Manual on Uniform Traffic Control Devices (MUTCD) recommends that traffic signal pedestrian phases be timed based on a walking speed of 4 feet per second. Lower values may be desirable if significant numbers of seniors or children are expected. It is likely that the next version of the MUTCD will recommend that pedestrian phases be timed based on a 3.5 feet per second walking speed.

Visibility

Pedestrians fare best when drivers can clearly see them. **Large corner radii** move pedestrians further from a driver's field of vision, while **smaller radii** bring them closer. Smaller radii encourage motorists to stop, rather than just slow down, for right-turn-on-red movements. A good rule of thumb is to provide the minimum radius that will satisfy the largest truck expected to regularly make the given turning movement.

Motorist speed

Controlling motorist speeds for areas where car/pedestrian conflict points occur helps to mitigate danger to pedestrians. Lower vehicle speeds increase the likelihood that drivers will choose to stop for pedestrians. At locations where **channelized right turns** are provided for motorists, it may be helpful to provide high visibility signing or enhanced crosswalk options such as a **raised crosswalk**.

2.3.1.3 :: Walking Along Arterial Streets

A third challenge commonly faced by pedestrians along urban arterials is walking next to high speed traffic. Sidewalks placed adjacent to narrow outside traffic lanes create a noisy pedestrian environment and put high-speed vehicles just a few feet away from pedestrians. On rainy or snowy days, spray and splashing from tires can reach up onto the sidewalk. On-street parking, **park strips**, shoulders, or other buffers between traffic and the sidewalk can make walking comfortable for pedestrians.

2.3.2 :: BICYCLISTS ON URBAN ARTERIALS

Bicyclists' challenges on urban arterials are related primarily to four factors: (1) the speed of cars, (2) the volume of cars, (3) the amount of space available for cars to safely pass a slower-moving cyclist, and (4) merging movements to and from freeway ramps.

2.3.2.1 :: Speed

The amount of roadway space needed for motorists to safely pass cyclists rises with increasing car/bicycle speed differentials and with increasing traffic volumes. Roads with car speeds of 30 mph or less allow many bicyclists to safely and comfortably operate in the same manner as cars.

Car speeds on typical urban arterials are often 40-50 mph, while cyclist speeds are usually between 10-25 mph. On roads where significant speed differentials are expected, providing sufficient width for motorists to pass cyclists in a safe manner is important. Two ways of doing this are wide **outside lanes** and **bike lanes**. The design manuals mentioned in Section 2.2 can provide designers with ideas of how to accomplish this in a given context.



Exhibit 2-14 Small radius corner



Exhibit 2-15 Channelized right turn



Exhibit 2-16 Raised crosswalk



Exhibit 2-17 Park Strip



Exhibit 2-18 Wide Outside Lanes



Exhibit 2-19 Bike lane

2.3.2.2 :: Volume

High traffic volumes and the speed differentials described in the previous paragraphs combine to form a significant challenge for cyclists. One challenge is that with streets four or more lanes wide, it is difficult to safely change lanes to reach a left turn lane through the dense, faster-moving traffic. One way to mitigate this challenge is to find ways to keep the speed differential to a minimum and educate bicyclists about how to safely signal and change lanes.

2.3.3 :: BICYCLISTS AT FREEWAY RAMP

Many cyclists avoid freeways interchanges because of the combination of large traffic volumes, merging vehicles, and difficult lane configurations. A few principles in the AASHTO *Guide for Development of Bicycle Facilities* and the *Oregon Bicycle and Pedestrian Plan* help address this issue. The information from these two sources is summarized in the following paragraphs along with additional recommendations.

2.3.3.1 :: Lane Configurations

Cyclists generally ride on the right side of the roadway unless making a left turn. Thus, a conflict is created on surface street approaches to freeway interchanges since vehicles diverging from the right side to enter the freeway must cross the path of cyclists continuing straight along the surface street. Merging movements between cyclists and vehicles are some of the biggest obstacles for cyclists sharing the road with cars.

Lane configurations with more than one diverging right turn lane can be difficult for cyclists to navigate because the cyclist must merge completely across the first right turn lane to enter a through lane. Figure 11 in the AASHTO guide gives examples of how to transition a bike lane through various right turn lane configurations. Where possible, right turn lanes should be developed to the right of the bike lane so that cars must merge across the bike lane, rather than cyclists merging across the traffic lane.

The downstream side of interchanges also poses merging challenges for cyclists, particularly if right turns from the freeway ramp are channelized to enable right turning traffic to freely flow from the ramp onto the surface street. Cyclists in this scenario enter the area to the left of the merging cars and must merge back to the right at some point. This can be difficult if merging volumes and speeds are high. Cyclists can more comfortably traverse these locations if merging right turn traffic is controlled with a yield or stop sign. Placing bicycle warning signs on the channelized approaches can alert drivers to expect cyclists in the merge area.

2.3.3.2 :: Freeway Ramp Turning Radii

Ramp turning radii also influence cyclists riding through freeway interchanges. Larger radii allow vehicles to merge to and from the surface street at higher speeds, thus creating larger speed differences between vehicles and cyclists. Designers should choose the minimum radius that allows for traffic flow needs. Cyclists and drivers can more easily share the road through merge areas when their speeds are relatively equal.

2.3.3.3 :: Interchange Signing and Striping

Signing and striping help to reinforce the messages that the lane configuration and turning radii present to the roadway user. Proper advance signage lets motorists and cyclists alike know where merging movements should take place. The signing and striping guidelines set forth in the MUTCD and the AASHTO guide should be followed to ensure consistent, logical design.

2.3.3.4 :: Interchange Type

There are several different types of freeway/surface street interchanges. The common types used in Utah are (1) **single point urban interchanges (SPUIs)**, (2) **diamond interchanges**, and (3) **cloverleaf interchanges**.

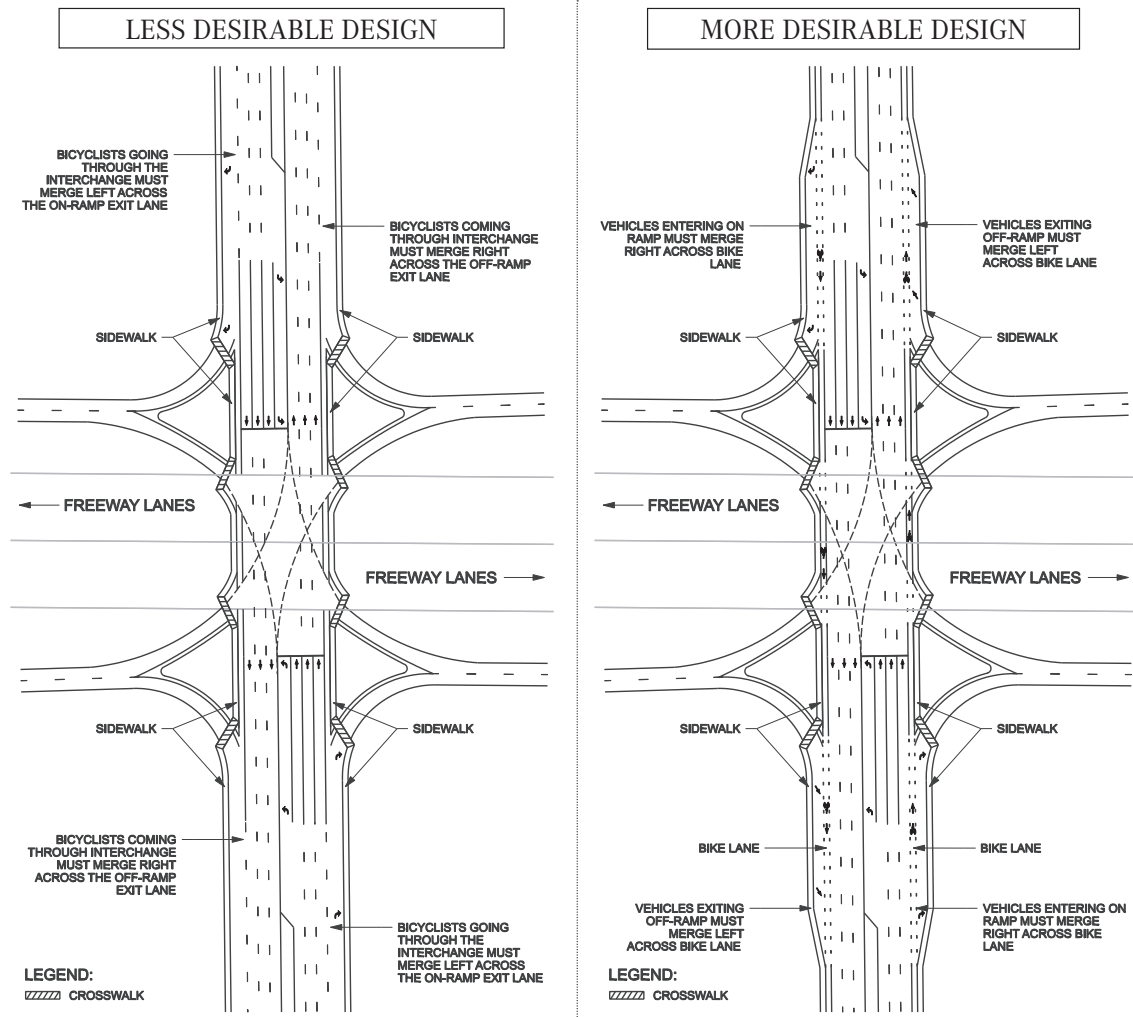


Exhibit 2-20 SPUI diagram



Exhibit 2-21 Diamond Interchange

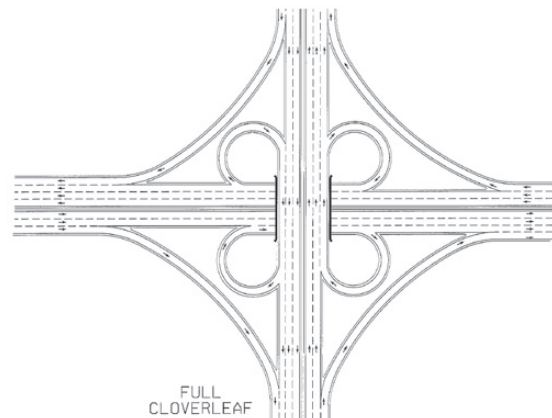


Exhibit 2-22 Cloverleaf interchange

SPUIs

A SPUI brings all of the various turning movements into a single signalized intersection. Traditional SPUIs present several challenges to cyclists. The first challenge is that bringing all of the movements from the ramps into a single intersection results in a very large distance between the near and far sides of the intersection. Since cyclists are typically traveling between 10-25 mph, they may have a difficult time making it across the intersection in the given yellow-red light interval. The other challenge is that turning radii on SPUIs are usually kept large in order to allow cars to turn at relatively high speeds. Exhibit 2-20 shows sample drawings of a SPUI interchange. The left half shows a design where the outside right lanes are continuous with the ramps, which makes the required merging movements more difficult for cyclists. The right half shows a design where the off- and on-ramps are developed to the right of a bike lane and vehicles are required to merge across the bike lane. This allows cyclists to avoid having to merge across higher speed traffic lanes in order to keep proceeding straight through the interchange.

Diamond Interchanges

Diamond interchanges consist of two separate signalized intersections located on the surface street/freeway ramp intersections on either side of the freeway. Right turns on and off of the ramps are sometimes channelized, which facilitates some high speed merging and diverging movements to and from the surface street. Generally, the ramps are oriented at close to a 90-degree angle with the surface street. This promotes better sight lines for cars turning right onto the surface street to see cyclists coming through the interchange.

Cloverleaf Interchanges

Cloverleaf interchanges are found less frequently in Utah than SPUIs or diamond interchanges. These interchanges are not signalized. Movements between the surface street and freeway are made by merging from the right side of the departure road to the right side of the destination road. The challenges for cyclists at a cloverleaf interchange are similar to those found at a SPUI. Cloverleaf interchanges facilitate high-speed merging movements on both sides of the freeway. The merging movements also occur at a sharp angle, which makes it difficult for motorists to see cyclists to their left as they merge onto the surface street.

Interchange Summary

The variables of approach lane configuration, turning radii, and allowance for free-flow right turns can be adjusted to make any type of interchange more accommodating to cyclists. If all other factors are equal, interchanges where the grade of the surface street is kept level are more accommodating. Interchanges where the surface street climbs over the freeway cause cyclists to slow down where diverging movements occur, thus increasing the speed differential between cyclists and motorists.

2.4 :: COMMON DESIGN CHALLENGES

The purpose of this section is to highlight some challenges that designers often face and describe some potential solutions to these challenges. Refer to the design manuals mentioned in Section 2.2 of this chapter for a more thorough understanding of other specific pedestrian and bicycle design principles.

2.4.1 :: FACILITY SELECTION

Sometimes adding a given pedestrian or bicycle facility is not appropriate. Some facilities can even make a situation worse than no facility at all. This is particularly true of bicycle facilities that direct cyclists to ride in unsafe locations, such as bike lanes that are placed in the “door zone” of parked vehicles (discussed in the next section). It can also be true of shared-use paths. Shared-use paths are useful and desirable along corridors where path crossings are limited and the path serves a need not met by an adjacent street. Otherwise, pedestrians and bicyclists should generally be accommodated by sidewalks and roadways, respectively. Separating cyclists onto two-way paths adjacent to roadways with frequent crossings puts cyclists into places where motorists are not expecting to encounter them. They also make it more difficult for cyclists to access destinations on the opposite side of the street from the path. The design of facilities should reinforce correct traffic principles and not confuse road users. Facilities that are likely to cause confusion or are not consistent with correct traffic principles should not be implemented.

2.4.2 :: PARKING

Care should be taken not to stripe bike lanes and parking areas in a manner that results in a bike lane that can be partially or entirely obscured by someone opening a car door. It is better to not have a bike lane at all than to stripe one that directs cyclists to ride where car doors are likely to be opened. Exhibit 2-23 shows a bike lane where an opened car door obscures the entire bike lane. This location would be safer with no bike lane at all, thereby conveying the message that a cyclist should ride closer to the middle of the roadway.

2.4.3 :: PLACEMENT OF SIGNS AND PAVEMENT MARKINGS

The AASHTO guide is intentionally vague about the placement intervals of bike lane signs and pavement markings. It essentially says that signs and symbols should be placed after intersections and in other locations as appropriate. The reason that the guidance is vague is that no two roadways are exactly alike and it would be difficult to create well-defined standards for each of the many different scenarios. A good rule of thumb is to space bicycle symbols approximately 400 feet apart, and signs approximately 800 feet apart. Engineering judgment is required to raise or lower these values depending on factors that introduce changed conditions into the roadway, such as the number of intersections and driveways present along a given stretch of roadway. Exhibit 2-24 shows an example of a pavement marking that can be placed over traffic signal sensors to help cyclists know where to position their bicycle in order to be detected.

2.5 :: PUBLIC INVOLVEMENT RESOURCES FOR DESIGNERS

There are a number of cycling groups throughout Utah. They can be valuable sources of information about how UDOT projects can better meet the needs of cyclists. Table 2-4 provides a summary of the existing cycling groups and their information. For those groups with a website listed, click on the website name to view the site.



Exhibit 2-23 Bike lane in door zone

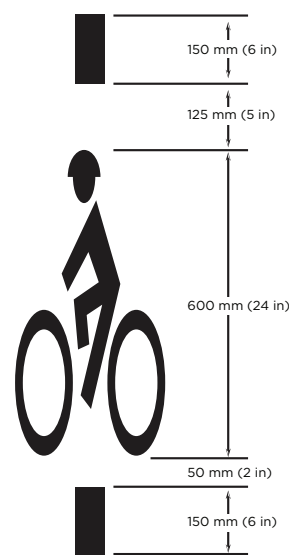


Exhibit 2-24 Detection “sweet spot” pavement marking

Currently there are no organizations in Utah that exist with a primary focus on pedestrians. However, Weber Pathways, Trail Mix, Mountain Trails, and the Cache Bike/Ped Advisory Committee focus on both bicycle and pedestrian issues. Additionally, various local groups such as PTAs and Chambers of Commerce may want to provide input on particular projects affecting their interests.

Table 2-4 Utah Pedestrian and Bicycle Groups



Group Name	Location Served	Website
Utah Bicycle Coalition	Entire state	www.utahbikes.org
Salt Lake City Mayor's Bicycle Advisory Committee	Salt Lake City	
Salt Lake County Bicycle Advisory Committee	Salt Lake County	www.slcbac.org
Weber Pathways	Weber County	www.weberpathways.org
Trail Mix	Grand County	www.grandcountyutah.net/trailmix/index.htm
Mountain Trails	Summit County	www.mountaintrails.org
Weber-Ogden Bicycle Advisory Committee	Weber County	
Davis Co. Bicycle Advocacy and Advisory Committee	Davis County	www.davisbike.org
Timpanogos Bicycle Transportation Alliance	Utah County	
Southwestern Utah Bicycle Touring Association	Washington and Iron Counties	www.swubta.com
Salt Lake City Bicycle Collective	Salt Lake County	www.slcbikecollective.org
Cache Bike/Ped Advisory Committee	Cache County	



MAINTENANCE RESOURCES

3.0 :: INTRODUCTION

Pedestrian and bicycle facilities require maintenance in order to function properly. Various conditions can reduce the usability of these facilities and lead to maintenance needs. These conditions can be caused by weather, vegetation, vehicular wear-and-tear, or other factors. This chapter describes maintenance concerns pertinent to pedestrian and bicycle facilities, along with suggestions from literature already published on topics that address these concerns.

Some maintenance conditions are relevant to multiple types of pedestrian and bicycle facilities. For example, pavement cracking due to vegetative growth can affect both sidewalks and shared-use paths. For this reason, this chapter's sections are organized according to type of condition. Each section contains a description of the condition, the types of facilities it affects, and alternatives to help mitigate the condition. References are given for alternatives that were obtained from existing planning literature.

It is important to mention that while some maintenance of pedestrian and bicycle facilities is performed by UDOT, much of it is the responsibility of cities and landowners with property adjacent to the roadway. For example, removal of snow from sidewalks is the responsibility of the adjacent landowner and snow removal from curbside parking locations (if desired) is the responsibility of the local city.

3.1 :: SNOW

Snow reduces traction and can cause slipping and/or falling, especially if it remains in place long enough to be compacted into ice by shoes or vehicle tires. Snow itself can also be a physical obstacle to pedestrians,

The current UDOT snow removal policy is as follows:

The removal of snow by State forces, except in emergencies, shall be confined to the limits of the highway right-of-way. The removal of the normal snowfall and windrows of plowed snow on private road approaches and driveways, both on and off the highway right-of-way, is the responsibility of the property owner. When clearing these approaches, the property owner shall not push or pile the snow onto the State right-of-way. Within towns and where curb and gutter exist, the normal parking areas adjacent to the travel lanes may be used for snow storage by State forces. If it is desired to remove this snow it will be the responsibility of the city, county, or the adjacent property owner. The State will not haul snow off the highway except on structures and in canyons where removal of the snow by other means is impractical.

Additionally, snow removal services will not be provided for the following (except where provided through written agreement with UDOT):

- Sidewalks
- Overhead crosswalk structures
- Walkways attached to structures
- Driveways
- Parking lots
- Roads not on the State System
- Overhead vehicular structures not on the State System

particularly those with disabilities, when it is piled up in their path. This occurs most frequently when roads are plowed and the snow is pushed onto street corners, sidewalks, roadway shoulders, and bike lanes. An example of this is shown in Exhibit 3-1.

Snow affects different types of pedestrian and bicycle facilities in different ways. Sidewalks and on-street bicycle facilities are affected in two ways: first, by the need to have the initial snowfall cleared, and second, by the tendency of snowplows to pile snow at the edges of roads and at crosswalk pedestrian ramps where cyclists and pedestrians are likely to be. Snow piled on the sides of the road requires bicyclists to ride with motor vehicle traffic for greater distances.



Exhibit 3-1 Snow plowed into crosswalks

Shared-use paths also are affected by snow, but the main concern with these facilities is getting the initial snowfall cleared off of the path. These paths are separated from roadways, so they are not subject to snowplows pushing snow onto the path, except at intersections where a path crosses a roadway.

Some of the methods that can be implemented to reduce the inconvenience of snow to pedestrians and bicyclists include:

- Do not store snow on sidewalks, nor in the bike lane (*Oregon Bicycle and Pedestrian Plan*; p. 177)
- Clear the most heavily used pedestrian routes like bus stops and curb ramps at street crossings (*AASHTO Guide for the Planning, Design, and Operation of Pedestrian Facilities*; p. 116)
- Track routes of high year-round demand and consider this when planning snow removal routes (*UDOT 2001 Statewide Pedestrian and Bicycle Plan*; p. 57)

3.2 : : DEBRIS

A variety of objects end up on roads. Debris such as broken glass, rocks, sticks, leaves, and dirt accumulate on the road and can potentially cause accidents. Automobile traffic tends to push debris to the outside of the road where it can build up and present a hazard to bicyclists traveling along the right edge of the road. A bicyclist who is concerned with maneuvering around debris may be less conscious of traffic and may swerve suddenly – an action that could lead to an accident. Debris can also lead to accidents by puncturing tires, becoming lodged in spokes, or reducing traction.

Sidewalks are not as affected by debris because they usually have adjacent curb and gutter to keep objects off the sidewalk. Also, pedestrians travel at much lower speeds than bicyclists and are able to more easily react to objects that do make it onto the sidewalk. Shared-use paths can accumulate debris, but this debris is usually vegetation-related and will be discussed later in this chapter.

Some of the methods used to mitigate problems with road debris include:

- Sweep close to the right edge. If necessary, use vacuum trucks to remove material, especially if it accumulates adjacent to curbs. Pay particular attention to locations such as underpasses, where changes in lighting conditions can blind bicyclists to surface hazards. (*Federal Highway Administration (FHWA) 2006 University Course on Bicycle and Pedestrian Transportation*; p. 282)
- Establish a schedule for sweeping and provide it to interested parties (*Oregon Bicycle and Pedestrian Plan*; p. 172)
- Pave gravel driveways and approaches back 15 feet from the road to prevent loose gravel from spilling onto the shoulders (*FHWA 2006 University Course on Bicycle and Pedestrian Transportation*; p. 237)
- Require tow-vehicle operators to remove glass and other debris after crashes (*Oregon Bicycle and Pedestrian Plan*; p. 172)



Exhibit 3-2 Damaged sidewalk

3.3 :: PAVEMENT AND SURFACE

Uneven sidewalks are more difficult for pedestrians to negotiate than well-maintained sidewalks, especially for those who are vision impaired or in wheelchairs. Likewise, cracks, potholes, pavement shoving, and other surface deformities present a hazard for bicyclists on roadways. Pavement and surface concerns are applicable to all types of pedestrian and bicycle facilities, although they are primarily found on sidewalks and on-street bicycle routes. Sidewalks can become cracked through freeze-thaw processes or by roots from trees growing in park strips. Sometimes the smooth concrete surface can also wear away, exposing the larger aggregate particles and creating a bumpy surface.

Vehicular wear-and-tear and freeze-thaw processes can also cause potholes, cracks, and other surface irregularities in the roadway. Many utility covers are located along the edges of roads where cyclists normally ride. When re-paving work is done, it is important to make sure that the area around these covers is rotomilled so that the finished re-paving will bring the cover flush with the surrounding pavement and not create a de-facto pothole. Vehicular wear-and-tear can also cause roadway striping to fade over time.

In areas with large numbers of heavy vehicles that frequently accelerate and decelerate from the same location, the pavement may shove. This shoving may occur in the area where cyclists normally ride and can constitute a slippage hazard, particularly when the pavement is wet. This condition most commonly occurs on roads with large numbers of buses that pick up passengers at curbside locations.



Exhibit 3-3 Pavement shoving

Maintenance methods that can be implemented to reduce problems associated with pavement and surface concerns include:

- Establish a sidewalk maintenance program, whether that involves performing a cycle of regular maintenance or ensuring that requests for maintenance are acted upon in a timely fashion (*Designing Sidewalks and Trails for Access, Part I*; p.67)
- Re-stripe on-street bicycle facilities (lines and symbols) in accordance with adjacent roadway re-striping
- Re-stripe multi-use paths as needed to ensure proper function of lines and symbols
- Ensure that grates have a maximum 1/2-inch gap in the direction of travel, and that utility covers are flush with the street or sidewalk level (AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*; p. 117)
- Patching surfaces as smoothly as possible and requiring other agencies or private companies to do likewise whenever they dig up a road or trail (FHWA *2006 University Course on Bicycle and Pedestrian Transportation*; p. 278)
- Utilize concrete acceleration/deceleration pads at bus stops along heavy bus routes in order to mitigate problems with asphalt shoving (see Exhibit 3-4)



Exhibit 3-4 Concrete acceleration/deceleration pad

3.4 :: VEGETATION

Overhanging vegetation can be a hazard to visually impaired pedestrians who may not be able to see plants growing above sidewalks. Root systems from trees cause difficulties when they expand beneath the pavement and break it up. Vegetation affects all types of pedestrian and bicycle facilities. Roots primarily affect sidewalks and shared-use paths. While able-bodied pedestrians may be able to easily step across a sidewalk bulge, wheelchair users may not be able to maneuver past such a deformity.

Fallen leaves can affect all types of facilities. On any pavement surface, fallen leaves can cause a slip hazard, particularly when they are wet. On roadways, fallen leaves can quickly clog storm drain inlets during rain storms and lead to water ponding upstream of the inlets. This often occurs near pedestrian ramps and can make it difficult for pedestrians to comfortably access crosswalks.



Exhibit 3-5 Water ponding



Exhibit 3-6 Puncturevine “goathead” plant

One special vegetative concern related to shared-use paths is thorns. Some stretches of shared-use path are difficult to ride a bicycle through without puncturing a tire. This concern can best be mitigated by ensuring that all disturbed areas adjacent to the path are re-vegetated properly after construction activities and that no disturbed areas are left open to colonization by exotic weed species such as the appropriately-named puncturevine (i.e. “goatheads”).

Ways to minimize vegetative maintenance problems include:

- Keep vegetation trimmed to allow at least 2 feet clearance between the edge of the pavement and the vegetation (FHWA 2006 *University Course on Bicycle and Pedestrian Transportation*; p. 282)
- Keep drains clear to prevent standing water (AASHTO *Guide for the Planning, Design, and Operation of Pedestrian Facilities*; p. 117)
- Trim grass along bike paths regularly to expose any potential hazards (FHWA 2006 *University Course on Bicycle and Pedestrian Transportation*; p. 283)
- Trim hanging branches so that bicyclists and pedestrians have sufficient clearance (*Oregon Bicycle and Pedestrian Plan*; p. 173)
- Ensure that areas disturbed in construction are properly re-vegetated



Exhibit 4-1 Bicycle and pedestrian bridge funded by Transportation Enhancement program

FUNDING RESOURCES

4.0 :: INTRODUCTION

The purpose of this chapter is to describe the sources of funding that can be used to plan, design, and construct pedestrian and bicycle facilities. Funds that UDOT receives for new construction or reconstruction projects can be used for these purposes. For example, a multi-use trail could be included as part of a new limited access roadway and sidewalks or bike lanes could be included as part of a road reconstruction project. Some funding sources come from the federal government, while others come from state, county, and city governments or private sources.

4.1 :: FEDERAL FUNDING SOURCES

There are six specific federal programs that can be used for pedestrian and bicycle facilities. These programs are described in the following sub-sections.

4.1.1 :: TRANSPORTATION ENHANCEMENT (TE) PROGRAM

The TE program can be used for 12 different categories of projects. To qualify, each project must demonstrate that it has a relationship to surface transportation. Guidance from the Federal Highway Administration (FHWA) states that the following factors can help establish this relationship:

- The project's proximity to a highway or a pedestrian/bicycle corridor
- Whether the project enhances the aesthetic, cultural, or historic aspects of the travel experience
- Whether the project serves a current or past transportation purpose

Projects must also be a significant enhancement to the transportation network, meaning that TE funds cannot be used for roadway elements that are routinely included in roadway projects. The project sponsor must also pay for 20% of the project costs.

Table 4-1 lists the 12 eligible categories and describes each of them.

Table 4-1 Eligible Categories for Transportation Enhancement Funding

Category	Description
Provision of facilities for pedestrians and bicycles	New or reconstructed sidewalks, walkways, or curb ramps; wide paved shoulders for non-motorized use, bike lane striping, bike parking, and bus racks; construction or major rehabilitation of off-road shared-use paths (non-motorized transportation trails); trailside and trailhead facilities for shared-use paths; bridges and underpasses for pedestrians, bicyclists, and trails.
Provision of safety and educational activities for pedestrians and bicyclists	Educational activities to encourage safe walking and bicycling.
Acquisition of scenic easements and scenic or historic sites (including historic battlefields)	Acquisition of scenic land easements, vistas, and landscapes; acquisition of buildings in historic districts or historic properties, including historic battlefields.
Scenic or historic highway programs (including the provision of tourist and welcome center facilities)	For projects related to scenic or historic highway programs: construction of turnouts, overlooks, and viewing areas; construction of visitor and welcome centers; designation signs and markers.
Landscaping and other scenic beautification	Landscaping, street furniture, lighting, public art, gateways along highways, streets, historic highways, trails, and waterfronts.
Historic preservation	Preservation of buildings in historic districts; restoration and reuse of historic buildings for transportation-related purposes.
Rehabilitation and operation of historic transportation buildings, structures, or facilities (including historic railroad facilities and canals)	Restoration of historic railroad depots, bus stations, ferry terminals and piers, and lighthouses; rehabilitation of rail trestles, tunnels, and bridges; restoration of historic canals, canal towpaths, and historic canal bridges.
Preservation of abandoned railway corridors (including the conversion and use of the corridors for pedestrian or bicycle trails)	Acquiring railroad rights-of-way; planning, designing, and constructing multi-use trails; developing rail-with-trail projects.
Inventory, control, and removal of outdoor advertising	Billboard inventories and removal of illegal and nonconforming billboards. Inventory control may include, but not be limited to, data collection, acquisition and maintenance of digital aerial photography, video logging, scanning and imaging of data, developing and maintaining an inventory and control database, and hiring of outside legal counsel.
Archaeological planning and research	Research, preservation planning, and interpretation of archaeological artifacts; curation for artifacts related to surface transportation and artifacts recovered from locations within or along surface transportation corridors.
Environmental mitigation-- (i) to address water pollution due to highway runoff; or (ii) reduce vehicle-caused wildlife mortality while maintaining habitat connectivity	For existing highway runoff: soil erosion controls, detention and sediment basins, and river clean-ups. Wildlife underpasses or other measures to reduce vehicle caused wildlife mortality and/or to maintain wildlife habitat connectivity.
Establishment of transportation museums	Construction of new transportation museums; additions to existing museums for a transportation section; conversion of railroad stations or historic properties to museums with transportation themes.



Local government agencies can submit applications to UDOT to request TE funding for projects. For questions regarding the TE Program, call the UDOT Systems Planning and Programming front desk at (801) 965-4129 and ask for the Local Governments office. Information may also be found on UDOT's TE website by [clicking here](#).

4.1.2 :: CONGESTION MITIGATION/AIR QUALITY (CMAQ) PROGRAM

The CMAQ program provides funding for state departments of transportation (DOTs), metropolitan planning organizations (MPOs), and transit agencies to implement surface transportation and other related projects that improve air quality and reduce congestion. Within Utah, the MPOs are responsible for evaluating CMAQ applications and selecting projects.

In order to be eligible for CMAQ funds, a project must be within an area that does not meet the National Ambient Air Quality Standards ("non-attainment areas") or within a former non-attainment area that is now in compliance ("maintenance areas"). Utah, Salt Lake, and Davis counties, as well as parts of Weber and Tooele counties, are classified as either non-attainment or maintenance areas for one or more pollutants, and therefore are eligible to receive CMAQ funding. CMAQ funds are distributed proportionately based on such factors as area population and severity of air pollution.



Exhibit 4-2 Shared-use path funded by CMAQ program

Examples of projects that could be implemented with CMAQ funding include, but are not limited to:

- Improved public transit
- Traffic flow improvements such as signal coordination
- High-occupancy vehicle lanes
- Rideshare services
- Bicycle and pedestrian facilities
- Assistance with implementation of flexible work schedules

4.1.3 :: SAFE ROUTES TO SCHOOL PROGRAM (SR2S)

SR2S grants are available for pedestrian and bicycle safety and traffic calming measures in the vicinity of schools.

The purpose of this federal program is to:

- Enable and encourage children, including those with disabilities, to walk and bicycle to school
- Make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age
- Facilitate the planning, development, and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of schools

SR2S efforts should incorporate the “5 Es” – engineering, education, enforcement, encouragement, and evaluation. Grants may be used for both infrastructure and non-infrastructure needs. Eligible schools include:

- Public elementary, middle, and junior high schools
- Public charter schools
- School districts serving children in grades kindergarten through eighth grade

In order to receive a SR2S grant, schools must have a Student Neighborhood Access Plan (SNAP) in place, and the proposed project must be consistent with that plan. No matching funds from project participants are required for this program. UDOT administers the SR2S program in Utah. The maximum amount of money that may be awarded for a single infrastructure project is \$150,000. The limit for non-infrastructure projects is \$75,000.

The UDOT SR2S website has more information about this program, including examples of eligible project types and a downloadable application. This website can be viewed by [clicking here](#).



4.1.4 :: RECREATIONAL TRAILS PROGRAM (RTP)

The Recreational Trails Program (RTP) funds development and maintenance of recreational trails and trail-related facilities for both non-motorized and motorized users. RTP funding may be used for:

- Construction and maintenance of trails and trail related facilities
- Development of staging areas
- Trailheads
- Restroom facilities

RTP funding may not be used for non-trail related activities such as:

- The development of campgrounds
- Purchase of picnic tables
- Landscaping
- Irrigation system development
- Law enforcement or similar patrols

The Utah State Division of Parks and Recreation administers the RTP program. They can be reached by calling (801) 538-7220 or by emailing parkcomment@utah.gov.

4.1.5 :: SCENIC BYWAYS PROGRAM

The purpose of the Scenic Byways Program is to recognize and enhance roads that have outstanding scenic, historic, cultural, natural, recreational, and archaeological qualities. One of the activities eligible for funding from this program is construction of bicycle and pedestrian facilities that enhance a scenic byway. For questions regarding this program, call the UDOT Systems Planning and Programming front desk at (801) 965-4129 and ask for the Scenic Byways coordinator. Grant application information can also be found by [clicking here](#).



4.1.6 :: FEDERAL LANDS HIGHWAYS PROGRAM

A large percentage of the land in Utah is federally managed. Highways and roadways passing through these tracts may be designated as Federal Land Highways, and as such are eligible on a competitive basis for projects funded with Federal Land Highways monies. While the primary focus of these funds is highway improvements, they may be applied toward pedestrian and bicycle facilities along these highways.

4.2 :: NON-FEDERAL FUNDING SOURCES

States and local governments can use their own funding sources for pedestrian and bicycle projects or apply for grants from private sources. Pedestrian and bicycle needs can be accommodated as part of larger roadway projects, money can be designated for pedestrian- and bicycle-specific improvements, and land development codes can be written to require some of these improvements when land adjacent to roadways is developed. These funding sources are described in the following sub-sections.

4.2.1 :: SAFE SIDEWALK PROGRAM

The Safe Sidewalk Program is a state-funded program that provides funding for construction of new sidewalks adjacent to state routes where sidewalks do not currently exist. The program enables sidewalks to be installed in locations where major construction or reconstruction of a route is not planned for 10 or more years.



Exhibit 4-3 Safe Sidewalk Program project

The following criteria must be met for a proposed sidewalk location to be considered for this program:

- Be adjacent to a State highway within an urban area or an area where the immediate environment of the project is of an urban nature
- Have significant pedestrian traffic
- Local government project sponsor must pay for 25 percent of the cost

[Click here](#) for more information about this program.



4.2.2 :: INCORPORATION WITH ROADWAY PROJECTS

The state, counties, and cities can choose to use their own transportation funds for pedestrian and bicycle facilities. It is often much easier to add sidewalks, pavement widening, or re-striping to an existing project since the incremental cost of such improvements may be small in comparison to the overall project cost. Cost savings can be realized because construction crews will already be on-site performing other work.

Additionally, this method enables all elements of the roadway (pedestrian, bicycle, and motor vehicle) to more cohesively fit together than when pedestrian or bicycle facilities are retro-fitted at a later time.



Exhibit 4-4 Ped/bike facility incorporated into a roadway project

4.2.3 :: UTILIZATION OF LAND USE CODES

Many communities rely on developers to construct pedestrian and bicycle facilities – particularly sidewalks – along the roadway frontages of their developments. This is an effective way of getting sidewalks constructed, but it can lead to discontinuous sidewalk systems in locations where development is spotty. Some communities also require developers to construct a certain width of roadway adjacent to their developments. This method can be used to obtain necessary right-of-way for on-street bicycle facilities.



Exhibit 4-5 New development with sidewalks

4.2.4 :: BOND MEASURES

A few communities have successfully raised money for pedestrian and bicycle improvements by placing bond measures on their election ballots. Examples of this are open space bonds passed by Salt Lake City and Salt Lake County, as well as a bond for non-motorized trail development in Park City.

4.2.5 :: BIKES BELONG COALITION GRANTS

The Bikes Belong Coalition is a bicycle industry trade group that provides small grants (generally between \$2,000 and \$10,000) for bicycle projects. These funds are usually not sufficient to pay for an entire project, but are often used as matching funds needed to pursue large federal grants. Four projects in Utah have previously received grant money from this program. More information about this program can be found by [clicking here](#).



4.2.6 :: OTHER PRIVATE GRANTS

Grants may be available from other private foundations and industry trade groups. Private grant opportunities are too numerous to list by name, but nonetheless deserve to be mentioned in this document as a source of potential pedestrian and bicycle facility funding.



EDUCATION & ENFORCEMENT RESOURCES

5.0 :: INTRODUCTION

The purpose of this chapter is to discuss the importance of education and enforcement to safe co-existence between pedestrians, bicyclists, and motorists on Utah's roadways. The basics of proper behavior by each of these modes of travel are discussed, and resources are listed for readers that desire a more in-depth discussion of these topics.



Exhibit 5-1 Pedestrian walk signal

5.1 :: PEDESTRIAN EDUCATION

Pedestrians generally know that they should cross streets at crosswalk locations, wait for the "WALK" symbol before crossing at signalized intersections, look both directions before crossing, and not cross busy streets at mid-block locations (i.e. "jaywalk"). Pedestrians use sidewalks; vehicle drivers use roads. For the most part, the motor vehicle and pedestrian networks are separate and distinct. The greatest potential for conflict occurs at locations such as crosswalks and driveways where these two networks overlap. Although educating children about pedestrian safety is an ongoing challenge, adults at least seem to have a fairly solid grasp of what constitutes proper pedestrian behavior even though they do not always behave accordingly. There isn't a statewide standardized pedestrian safety curriculum taught to school children in Utah, but individual schools often teach pedestrian safety in conjunction with local health or police departments.

Table 5-1 lists a few of the resources available for readers to gain a better understanding of pedestrian education issues, and for ideas about how to present pedestrian safety messages to a variety of groups. Click on the title of a particular document to view it.

Table 5-1 Pedestrian Education Resources

Education Resource	Topics/Purpose
Safe Routes to School Guide (published by the National Center for Safe Routes to School)	This guide is geared towards parents, teachers, planners, and engineers that wish to enable more school children to safely walk or bike to school. Chapter 5 addresses education topics.
Pedestrian Education Web Page (Pedestrian and Bicycle Information Center)	Discusses targeting education messages to reach different user groups. Also discusses how to measure the effectiveness of education programs and create partnerships among groups with similar interests. Education examples and case studies are highlighted.
Bicycle and Pedestrian Safety Resource Guide (published by the National Highway Traffic Safety Administration)	This guide was prepared for pedestrian/bicycle safety professionals and others who develop programs at the state or community level. It describes countermeasures that can help solve a wide range of pedestrian and bicycle safety problems.



5.2 :: BICYCLIST EDUCATION

The relationship between bicycles and cars is more complicated than the relationship between pedestrians and cars. Since bicycles can operate at higher speeds than pedestrians and share vehicular operating characteristics such as turning and stopping, traffic law considers them vehicles when traveling on roadways. Most cities also allow bicycle riding on sidewalks except in some downtown areas. Cycling on sidewalks should be done at low speeds to avoid injuring pedestrians or risking a crash with an automobile whose driver is not expecting to encounter high-speed bicycles crossing a driveway or crosswalk.

Although the law grants cyclists the same rights and responsibilities as drivers of motor vehicles, there is still confusion about how cyclists should behave on roads. This confusion arises because most cyclists have little or no training on how to properly ride a bike in traffic, and therefore exhibit various riding behaviors. Likewise, many motorists are not trained to safely share the road with cyclists and do not know that Utah law requires them to give at least three feet of clearance when passing a cyclist. Cyclists should operate in the same manner as motorists. Doing so makes them more visible and predictable to motorists. Cyclists should also:

- Make turns and proceed through intersections in the same manner as cars
- Signal prior to turning or changing lanes
- Yield to oncoming or overtaking traffic before making the turn or lane change
- Obey stop signs, traffic signals, and other traffic control devices
- Use a white headlight and red rear light or reflector when riding at night

Cyclists need education to enhance their understanding of the types of risks they may encounter in traffic. In an attempt to avoid perceived dangers, many cyclists may be putting themselves in the path of greater dangers. One example of this is the tendency of inexperienced cyclists to ride too far to the right in certain situations. While doing this may increase the distance between them and overtaking vehicles, it may also expose them to hazards that they are not aware of. Although cyclists should ride towards the right side of the road like other slow-moving vehicles as a general rule, several commonly encountered situations call for exceptions to this rule. Riding too far to the right can create problems because of the following factors:

- Doors to parked cars could be opened into the path of the cyclist
- Debris and/or drainage grates are often located at the extreme right of the road
- Drivers of cars turning onto the road may have their line of sight trained on where the cars are and may not see the cyclist if they are riding to the extreme right
- Cyclists proceeding straight through an intersection are in conflict with right turning vehicles
- In traffic lanes with insufficient width for both a bicycle and car, a cyclist riding too far to the right may encourage the car driver to attempt an unsafe passing maneuver



Exhibit 5-2 Cyclist riding too far right



Exhibit 5-3 Cyclist riding in correct position

Many resources are available to people that wish to further their knowledge of proper cycling techniques. A few of them are listed in Table 5-2. Click on the title of a particular document to view it.

Table 5-2 Bicyclist Education Resources



Education Resource	Topics/Purpose
Safe Routes to School Guide (published by the National Center for Safe Routes to School)	Geared specifically towards parents, teachers, planners, and engineers that wish to enable more school children to safely walk or bike to school. Chapter 5 addresses education topics.
Bicyclist Education Web Page (Pedestrian and Bicycle Information Center)	Discusses the different abilities and behavioral characteristics of different types of cyclists (children, teens, adults). Highlights education examples and case studies. Also, devotes a page to motorist education.
League of American Bicyclists Bike Ed courses (offered in Utah through the Salt Lake City Bicycle Collective)	Different courses are tailored for children, adult road cyclists, and commuters. These courses incorporate classroom-style teaching as well as hands-on outdoor instruction. Those interested in registering for courses should visit the Salt Lake City Bicycle Collective website (www.slcbikecollective.org).
Utah Bicycle Commuter Guide (published by UDOT)	This is a handy 16-page document that covers topics important to commuter cyclists, such as proper clothing, lights/reflectors, applicable laws, and riding tips for a variety of environments and weather conditions.
Bicycling Street Smarts (Author: John Allen)	This informative guide contains in-depth discussion and examples of proper lane positioning, how to anticipate hazards, and assorted other useful information for cyclists that regularly ride in environments with lots of traffic.
Sharing the Road with Bicycles DVD (published by the Utah Department of Health in partnership with UDOT and the Utah Department of Public Safety)	This DVD shows what both bicyclists and motorists can do to safely share the road. It provides video examples that paper documents cannot.
Motorist & Bicyclist Guide for Sharing the Road (published by the Utah Department of Health)	This is a two-page brochure that gives helpful tips and instructional diagrams to show what both bicyclists and motorists can do to safely share the road and be respectful of one another.
Bike Suitability and Restrictions Maps (published by UDOT)	This document has two maps - one showing the shoulder width along state highways, and one showing the locations of highways where cyclists are prohibited from riding.

5.3 :: MOTORIST EDUCATION

Drivers are required by law to treat cyclists as slow moving vehicles with a right to use the roadway. Passing maneuvers should be completed carefully, and drivers should check in their mirrors to ensure that they are sufficiently clear of the cyclist before merging back to the right. Behaviors for drivers to avoid include:

- Passing cyclists too closely – Utah has designated three feet as the legal minimum for passing cyclists
- Honking at or otherwise harassing cyclists – such behavior can startle a cyclist, causing a loss of control on the part of the cyclist and possibly a very serious accident
- Passing a cyclist, then moving back to the right and slowing suddenly to make a right turn
- Following too closely behind a cyclist



Exhibit 5-4 Drivers passing cyclists safely

The Utah Office of Education has an outline of what instructors are to cover in their driver education curriculum. Driving safely around pedestrians and bicyclists is included in the outline. Most driver education classes use the *Drive Right* textbook, which contains a section on sharing the road with bicycles, pedestrians, motorcycles, and large trucks. Out of the 200 total questions that may appear on a Utah driver's license exam (not all questions are asked on each exam), 16 cover topics related to pedestrians and bicyclists.

In addition, the Utah Department of Health developed a *Share the Road with Bicycles* DVD and workbook, which was distributed to all high schools in the state. A 2007 survey of 55 schools indicated that 84% of respondents would use these materials in the future, and that 54% had already been using them. Some resources that are available to help educate drivers about operating safely around pedestrians and bicyclists are listed in Table 5-3. Click on the title of a particular document to view it.

The Department of Health selected one high school to perform testing to see whether the DVD and workbook materials were in fact helping increase drivers' knowledge of sharing the road with cyclists. Students were asked the same six questions about sharing the road with bicyclists, both before and after watching the DVD. For all six questions, the test scores improved after watching the DVD. The smallest increase on a particular question was from 93% to 97%. The most dramatic increase (from 23% to 85%) occurred on a question asking students to identify the minimum distance a motorist should maintain from a cyclist while passing.

Table 5-3 Motorist Education Resources

Education Resource	Topics/Purpose
<i>Sharing the Road with Bicycles DVD</i> (published by the Utah Department of Health in partnership with UDOT and the Utah Department of Public Safety)	This DVD shows what both bicyclists and motorists can do to safely share the road. It is useful because it offers video examples that other paper documents cannot provide.
<i>Drive Right</i> (published by Pearson Prentice Hall)	Used by most driver training programs in Utah. Chapter 8 teaches readers how to safely share the road with motorcycles, pedestrians, bicyclists, and large trucks.
<i>Bicyclist Education Web Page</i> (Pedestrian and Bicycle Information Center)	Contains some limited information about how drivers should treat bicyclists.



5.4 : : PEDESTRIAN AND BICYCLE LAW ENFORCEMENT

Enforcement is a key component of better accommodating pedestrians and cyclists. All roadway users benefit when there is consensus about what constitutes proper behavior and there is an expectation that improper behavior will be punished. Many pedestrians and cyclists do not follow traffic laws because they don't believe that the laws apply to them, or do not expect those laws to be enforced.

One of the key problems facing bicyclists in particular is that motorists and law enforcement officers often do not know what constitutes proper cyclist behavior. It is difficult for cyclists and motor vehicles to safely share the road when differing viewpoints exist with regard to how a cyclist should behave. Readers that are interested in viewing Utah state laws regarding pedestrians, bicyclists, and motorists can do so by [clicking here](#). Illegal behaviors for cyclists to avoid include:

- Riding through red lights and stop signs
- Riding opposite the flow of traffic
- Riding too far to the right
- Queueing in the right turn lane (rather than in a through lane) while waiting at red lights
- Switching between behaving like a vehicle and behaving like a pedestrian, particularly at intersections
- Failure to signal before turns and lane changes
- Riding more than two abreast

UDOT is not an enforcement agency, but the physical design of roadway facilities conveys messages about how pedestrians and bicyclists should behave. Designs should ensure that correct messages are being sent, and that improper behaviors are not encouraged (this topic is discussed in more depth in Chapter 2). When pedestrians and cyclists are encouraged to behave in predictable ways, all road users benefit.





PUBLIC INVOLVEMENT RESOURCES

6.0 :: INTRODUCTION

The purpose of this chapter is to help members of the general public better understand UDOT's project development processes, project phasing, project types, organizational structure, and public involvement procedures. Knowledge of these processes is important in order to understand the opportunities that exist for offering input regarding UDOT projects.

6.1 :: UDOT PROJECT DEVELOPMENT PROCESS

The first step in the UDOT project development process is the creation of long range transportation plans. These plans lay out the projects that are expected to be completed over the next two to three decades, based on anticipated needs, revenues and project costs. After the plans are created, transportation planners work collaboratively to develop regional and statewide transportation improvement programs. The next two sub-sections discuss the planning and programming processes.

6.1.1 :: LONG-RANGE TRANSPORTATION PLANS

Plans are currently updated and revised on a four-year cycle. Long-range transportation plans are intended to include all regionally significant transportation improvement projects that will be needed over the next 20 or more years. These plans include all types of transportation projects, including roads, transit, and non-motorized facilities such as trails.

There are five main transportation plans prepared in Utah. Metropolitan planning organizations (MPOs) appointed for each of Utah's four urbanized areas – those areas with populations over 50,000 – each prepare a Regional Transportation Plan (RTP). UDOT prepares a transportation plan for the remaining rural and small urban areas of the state and also coordinates preparation of an executive summary of all five plans. This executive summary, together with the five individual plans, constitutes the statewide long-range transportation plan. This plan can be viewed by [clicking here](#). Table 6-1 lists the names of the four MPOs in Utah along with the areas that they serve. Exhibit 6-1 depicts these areas graphically. Click on the title of a particular MPO in Table 6-1 or on one of the highlighted areas of Exhibit 6-1 to be directed to their website.



Table 6-1 Metropolitan Planning Organizations in Utah

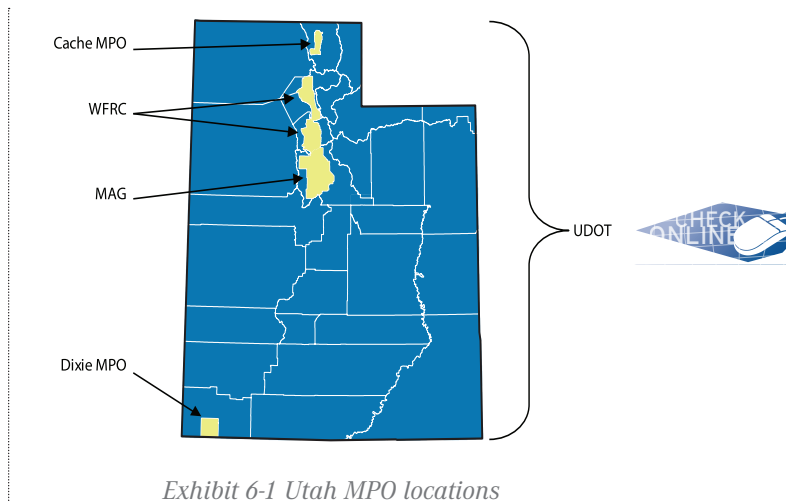
MPO Name	Jurisdictional Area
Wasatch Front Regional Council (WFRC)	Salt Lake-Ogden metro area
Mountainland Association of Governments (MAG)	Provo-Orem metro area
Cache Metropolitan Planning Organization (CMPO)	Logan area
Dixie Metropolitan Planning Organization (DMPO)	St. George area



Public and agency input is solicited and gathered as part of the development of the regional and statewide long-range plans. UDOT and the MPOs work directly with citizens, local governments, interest groups, and agencies to develop the plans. This is the best time for interested individuals and groups to identify pedestrian and bicycle needs on a system-wide basis and to discuss desired facilities related to specific transportation projects.

6.1.2 :: STATEWIDE TRANSPORTATION IMPROVEMENT PROGRAM (STIP)

Each year the MPOs and UDOT update their transportation improvement programs. As with the long-range plans, there are four regional Transportation Improvement Programs (TIPs) prepared by the MPOs and a combined STIP that UDOT prepares. The STIP is developed through a cooperative process between UDOT, the MPOs, and federal, city, and county governments. The STIP is the list of individual projects having the most pressing need, for which funding has been secured, cost estimates have been refined, and that are planned to be constructed within the next four years. UDOT's STIP also typically includes up to an additional two years of projects in a Concept Development (CD) phase that is used to refine the scope of the projects before assigning funds to them. People interested in pedestrian and bicycle issues should take the opportunity to be aware of the projects added to the CD portion of the STIP each year and to open a dialogue with the assigned UDOT Project Managers while the scope and budget of each project is being refined.



The development of the STIP is a continual process and the STIP is revised yearly. The first step in the STIP development process is for the four UDOT regions to identify a prioritized list of projects that they plan to complete, along with estimated costs for those projects. Next, a draft STIP is prepared and sent to the Utah Transportation Commission. Following provisional approval from the Commission, the draft STIP is sent out for public comment. After the public comment period, the draft STIP is sent back to the Commission for final approval. Finally, the draft STIP is sent to FHWA for their approval. After receiving FHWA approval, the STIP is considered final and can be implemented.

Projects involving federal or state funds must be placed on the STIP before they can be implemented. Federal law also requires that projects from the STIP be consistent with the statewide long-range plan. Newly-discovered high priority needs may require a long-range plan amendment before being added to the STIP.

The federal highway and transit bill passed by Congress requires that the STIP be made reasonably available for public review and comment. UDOT places legal notices in major newspapers inviting public comment to comply with this requirement. Copies of the proposed STIP are available on the UDOT website for those interested in viewing it. To access the STIP, [click here](#).

Projects that are wholly funded by cities and counties within metropolitan areas do not appear on the STIP and are exempt from this process. Persons or groups interested in adding or improving pedestrian and bicycle facilities with these projects will need to work directly with the city or county involved.

6.2 :: UDOT PROJECT PHASING

Project development work can begin for individual projects once they are on the approved STIP. Each project goes through four phases on its journey from concept to reality. These four phases are:

- Concept
- Environmental
- Design
- Construction

The following four sub-sections describe each of these phases in greater detail. Table 6-2 shows ways for the public to become involved in each phase.

Table 6-2 UDOT project phasing

Project Phase	Ways To Get Informed And Involved
CONCEPT	<ul style="list-style-type: none"> • Public meetings to discuss long-range transportation planning • Monthly Utah Transportation Commission meetings • Local newspaper articles and city newsletters • Television and radio reports
ENVIRONMENTAL	<ul style="list-style-type: none"> • Public hearings and open houses • Public comment forms • Calls/email/letters to the public involvement team • Surveys
DESIGN	<ul style="list-style-type: none"> • Public meetings • Individual meetings with the project engineers • Public comment forms • Calls/email/letters to the public involvement team
CONSTRUCTION	<ul style="list-style-type: none"> • Calls/email/letters to the public involvement team • Pre-, mid-, and post-construction surveys • Signing up for construction email updates • One-on-one meetings with project team members

6.2.1 :: CONCEPT

Refining the concept is the first phase in a particular project's evolution. During this phase, the project is recommended for a certain level of environmental review based upon the anticipated level of environmental impact. Potentially significant issues are also identified at this stage. Although there is no formal public outreach during concept development, an open dialogue between designers and advocates can help flesh out issues before cost estimates are set and funds allocated.

6.2.2 :: ENVIRONMENTAL

After the concept planning stage, the environmental review process is the most significant opportunity to influence the project development process. Each federally funded project must undergo a varying degree of environmental study depending upon the project's anticipated impact upon the environment. Projects that are funded wholly with state funds are not required to undergo the same level of review as projects involving federal money. Sometimes a State Environmental Study (SES) is prepared for these projects if they are expected to result in significant environmental impact, but the requirements of an SES are not as stringent as for federally funded projects. UDOT considers public outreach to be an essential component of SES processes.

Categorical Exclusion (CatEx) documents are prepared for federally funded projects that will not have a significant effect on human or natural environments. CatEx documents are relatively small, can be completed quickly, and have little or no public involvement. Most small projects, including many pedestrian and bicycle projects funded through the federal Transportation Enhancement program, go through the CatEx environmental process.



Exhibit 6-2 Environmental Phase

Environmental Impact Statements (EIS) are required for federally funded projects that will have a significant effect on the environment. These documents are very large and can take multiple years to complete because of the time required to assess the impacts of various alternatives and conduct the appropriate public involvement activities. An EIS document presents the project alternatives that are being studied and describes the environmental impacts of each alternative along with their benefits. The end product of an EIS is a Record of Decision (ROD). The ROD states which alternative is being chosen and describes mitigation measures that will accompany the chosen alternative for the purpose of reducing the environmental impact.

Environmental Assessments (EA) are prepared for federally funded projects where the environmental impact is not clearly known. Opportunity is given for the public to comment during the EA process. If the EA determines that the project will have a significant impact on the environment, an EIS must be prepared. If the EA determines that the project will not have a significant impact, a Finding of No Significant Impact (FONSI) is prepared and the project does not have to undergo further environmental review.

More information about projects currently in the Concept and Environmental phases can be found in the "Current Studies" portion of the UDOT website. This can be accessed by [clicking here](#).



6.2.3 :: DESIGN

Some preliminary design is generally required during the environmental phase in order to ascertain the potential impacts of a project. However, the design cannot proceed past the preliminary stage until the environmental process has been completed. Commitments that were made in the environmental phase are carried through into the actual design of the project in order to make the design consistent with the environmental document. More information about projects currently in the Design phase can be found in the “Projects in Design” portion of the UDOT website. This can be accessed by [clicking here](#).

6.2.4 :: CONSTRUCTION

After the project design is complete, the project is advertised and contractors have the opportunity to bid on the work. In order to inform the public of upcoming construction, the beginning of construction projects is announced to the public through press releases distributed to daily newspapers, television stations, and local newspapers or newsletters. Sometimes an advisory flier is passed out to adjacent residences and businesses prior to the beginning of construction in the area. The public has the ability to comment on construction-related impacts. However, the ability to actually influence the physical design of the project is not available at this phase.



Exhibit 6-3 Construction Phase

More information about projects currently under construction can be found in the “Projects Under Construction” portion of the UDOT website. This can be accessed by [clicking here](#).

6.3 :: UDOT PROJECT TYPES

Many different types of UDOT projects are completed on state roadways. Project types range from minor surface street rehabilitation to large new freeways. Some project types have the potential to improve pedestrian and bicycle conditions, while others do not. Descriptions of the primary UDOT project types are shown in Table 6-3.

Enhancement projects are frequently used to create pedestrian and bicycle facilities, sometimes on roadways and sometimes on separate paths. New construction and reconstruction projects are the other categories with the highest potential to incorporate pedestrian and bicycle improvements because they involve significant work on an entire roadway, usually including new alignments or widening. Re-striping a roadway to incorporate an improvement for cyclists can sometimes be done in conjunction with rehabilitation projects, but no widening is involved. All other project types are limited in nature and typically do not provide the opportunity to incorporate pedestrian and bicycle improvements.

Table 6-3 UDOT project types

Project Type	Description
New Construction	Projects on new locations.
Reconstruction	Projects on existing locations where little or none of the existing roadway can be salvaged.
Rehabilitation	Projects essentially on existing locations where most of the existing roadway can be salvaged.
Restoration	Rebuild or bring back the original design capability of the facility.
Safety Improvement	Project specifically to address a safety feature.
Bridge Replacement	Project to replace or rehabilitate a structure.
Enhancement	Project to provide sidewalks, beautification, underpasses, trails, bike paths, etc.
Preventive Maintenance	Projects only for preventive maintenance work on pavements or bridges.

6.4 : UDOT ORGANIZATIONAL STRUCTURE

The UDOT organization is broken into four geographic regions for design, construction, operations, and maintenance activities. Within each region, there are many positions in the staffing hierarchy. In the following sub-sections, descriptions are given of the UDOT regions and three important staff positions that members of the public will most likely contact when offering input about pedestrian and bicycle issues. The UDOT headquarters in Taylorsville carries out statewide programs and support to the regions for their activities. The groups operating there include Administrative Services, Legislative and Government Affairs, Operations, Project Development, and Systems Planning and Programming.

6.4.1 : UDOT REGIONAL OFFICES

UDOT consists of four geographically distinct regions. Region 4 is divided into three districts because of the large geographical area that it covers. The areas of Utah that fall within each of these regions and districts are shown in Table 6-4. A map illustrating these regions is shown in Exhibit 6-4.

6.4.2 : PROJECT MANAGER (PM)

A PM is responsible for scope, schedule, budget, and quality of a project from concept to one year after construction. PMs coordinate with other UDOT divisions such as Structures, Geotechnical, Right of Way, Design, Environmental, and Construction to see the project through to successful completion. Each UDOT region has PMs assigned to projects taking place in that region.



Exhibit 6-4 UDOT Region Map

Table 6-4 UDOT Regions

Region Name	Area Covered	Main Phone #
Region 1	Davis, Weber, Box Elder, Morgan, Cache, and Rich Counties. Headquarters in Ogden.	(435) 620-1600
Region 2	Salt Lake, Tooele, and Summit Counties. Headquarters in Salt Lake City.	(801) 975-4900
Region 3	Utah, Wasatch, Juab, Duchesne, Uintah, and Daggett Counties. Headquarters in Orem.	(801) 227-8000
Region 4	Main Office in Richfield. District Offices in: <ul style="list-style-type: none"> • Cedar City (covers Millard, Beaver, Iron, and Washington counties) • Price (covers Carbon, Emery, Grand, and San Juan counties) • Richfield (covers Sevier, Wayne, Piute, Garfield, Sanpete, and Kane counties) 	(435) 893-4799

6.4.3 : PUBLIC INVOLVEMENT MANAGER (PIM)

PIMs act as liaisons with the citizens of Utah. These representatives can help interested citizens make a difference in the project implementation process. UDOT employs PIMs in each geographic region. Region 2 has two PIMs and all other regions have one each. The PIMs may be reached by calling the region phone numbers listed in Table 6-4.

Many large projects have a PIM assigned exclusively to them. These PIMs are often consultants that have been hired by UDOT for a specific project. If a project has a consultant PIM, this person may be reached by first contacting the region PIM and asking for the contact information for the project-specific PIM.

6.4.4 : BICYCLE AND PEDESTRIAN COORDINATOR

UDOT has a Bicycle and Pedestrian Coordinator in the Planning Division of Systems Planning and Programming. This person provides support to all four UDOT regions and coordinates between the various groups and divisions on issues related to walking and biking. One responsibility of the Coordinator is to assist in connecting various pedestrian and bicycle interests outside UDOT to those within the Department. Another responsibility is developing long-range plans for pedestrian and bicycle facilities within the state transportation system. The Coordinator monitors utilization of the Bicycle and Pedestrian Accommodations Guideline and Questionnaire to make sure that it is consistently implemented on projects throughout the state, and also provides expertise to the Project Managers. The Bicycle and Pedestrian Coordinator can be reached by calling the UDOT Systems Planning and Programming front desk at (801) 965-4129. Information may also be found on the UDOT Walking and Biking website by [clicking here](#).

6.4.5 : PERMITS OFFICES

Events such as marathons, triathlons, and bicycle tours that will be using state roadways must receive a permit to do so. Each UDOT region has its own permits office. These offices can be reached by calling the phone numbers listed in Table 6-4 and asking for the permits department.

